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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/848,263	05/04/2001	Naoki Furuhashi	PF-2801/NEC/US/mh/B1(ELD)	6317

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EXAMINER

COLEMAN, WILLIAM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 09/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/848,263	Applicant(s) FURUHATA, NAOKI	
	Examiner W. David Coleman	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 42, 45, 47 and 53-89 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 53 is/are allowed.
- 6) ☒ Claim(s) 42, 45, 47, 54-59, 61-64, 66-68, 70-76, 78-81 and 83-96 is/are rejected.
- 7) ☒ Claim(s) 60, 65, 69, 77, 82, 87 and 89 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 25, 2003 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 42, 45 and 47 are rejected under 35 U.S.C. 102(e) as being anticipated by Yokoi, U.S. Patent 6,420,739 B1.

See **FIGS. 1A-4E** where Yokoi teaches a semiconductor device as claimed.

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5. Pertaining to claim 42, Yokoi teaches a monolithically integrated semiconductor device comprising:

a hetero-junction bipolar transistor (please note that a hetero-junction bipolar transistor can be substituted for the FET (column 4, lines 39-48)) :having at least one electrode contact layer **23** which contacts directly with at least one of collector, base and emitter electrodes; and
at least one passive device comprising a metal-insulator-metal capacitor having a bottom electrode **24**, a capacitive dielectric layer **25** and a top electrode **27**,
wherein one of said bottom and top electrodes and one of said collector, base and emitter electrodes comprise the same metal layer and have a same thickness.

6. Pertaining to claim 45, Yokoi teaches the device as claimed in claim 42, wherein said at least passive device further comprises:

a resistive element which comprises **3/12**:

at least a resistive element layer; and at least a resistive element electrode **9**.

7. Pertaining to claim 47, Yokoi teaches a monolithically integrated semiconductor device comprising:

a hetero-junction bipolar transistor :having at least one electrode contact layer which contacts directly with at least one of collector, base and emitter electrodes;

a resistive element which comprises at least a resistive element layer and at least one resistive element electrode; and

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a metal-insulator-metal capacitor which comprises a bottom electrode, a capacitive dielectric layer, and a top electrode,

wherein said electrode contact layer, said resistive element layer and said capacitive dielectric layer comprise the same compound semiconductor layer, and

wherein said resistive element electrode, said top electrode and said at least one of collector, base and emitter electrodes comprises the same metal layer having a same thickness.

8. Pertaining to claim 54, Yokoi teaches a monolithically integrated semiconductor device comprising:

a substrate (1);

a hetero-junction bipolar transistor (not shown) on said substrate and having at least one electrode (not shown) which contacts directly with at least one of a collector, a base and an emitter; and

a passive device on said substrate having the same material as said at least one electrode.

9. Pertaining to claim 55, Yokoi teaches the device as claimed in claim 54, wherein said passive device has at least one electrode and said at least one electrode which directly contacts one of said collector, base and emitter comprises the same metal layer.

10. Pertaining to claim 56, Yokoi teaches the device as claimed in claim 54, wherein said passive device comprises:

a resistive element which comprises at least a resistive element layer and at least a resistive element electrode; and

a metal-insulator-metal capacitor which comprises a bottom electrode, a capacitive dielectric layer and a top electrode.

11. Pertaining to claim 57, Yokoi teaches the device as claimed in claim 56, wherein said at least one electrode comprises a base electrode contact layer which contacts directly with a base electrode.

12. Pertaining to claim 58, Yokoi teaches the device as claimed in claim 57, wherein said base electrode contact layer, said resistive element layer and said capacitive dielectric layer comprise the same compound semiconductor layer.

13. Pertaining to claim 59, Yokoi teaches the device as claimed in claim 58, wherein said base electrode and said bottom electrode comprise the same metal layer.

14. Pertaining to claim 61, Yokoi teaches the device as claimed in claim 58, wherein said base electrode and said resistive element electrode comprise the same metal layer.

15. Pertaining to claim 62, Yokoi teaches the device as claimed in claim 56, wherein said at least one electrode comprises a collector electrode contact layer which contacts directly with a collector electrode.

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16. Pertaining to claim 63, Yokoi teaches the device as claimed in claim 62, wherein said collector electrode contact layer, said resistive element layer and said capacitive dielectric layer comprise the same compound semiconductor layer.

17. Pertaining to claim 64, Yokoi teaches the device as claimed in claim 63, wherein said collector electrode and said bottom electrode comprise the same metal layer.

18. Pertaining to claim 65, Yokoi teaches the device as claimed in claim 63, wherein said collector electrode and said top electrode comprise the same metal layer.

19. Pertaining to claim 66, Yokoi teaches the device as claimed in claim 63, wherein said collector electrode and said resistive element electrode comprise the same metal layer.

20. Pertaining to claim 67, Yokoi teaches the device as claimed in claim 62, wherein said at least one electrode comprises an emitter electrode.

21. Pertaining to claim 68, Yokoi teaches the device as claimed in claim 67, wherein said emitter electrode and said bottom electrode comprise the same metal layer.

22. Pertaining to claim 70, Yokoi teaches the device as claimed in claim 67, wherein said emitter electrode and said resistive element electrode comprise the same metal layer.

23. Pertaining to claim 71, Yokoi teaches the device as claimed in claim 54, further comprising:

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at least one electrode contact layer which contacts directly with said at least one electrode, wherein said passive device has at least one passive device electrode having two resistive elemental electrode contacts and at least one resistive element layer, contacting said two resistive element electrode contacts, and wherein said at least one electrode contact layer and said resistive layer comprise the same material.

24. Pertaining to claim 72, Yokoi teaches the device as claimed in claim 71, wherein said passive device electrode and said at least one electrode comprise a same metal layer.

25. Pertaining to claim 73, Yokoi teaches the device as claimed in claim 71, wherein said passive device further comprises:

a resistive element which comprises at least a resistive element layer and at least a resistive element electrode; and

a metal-insulator-metal capacitor which comprises a bottom electrode, a capacitive dielectric layer and a top electrode.

26. Pertaining to claim 74, Yokoi teaches the device as claimed in claim 73, wherein said at least electrode contact layer comprises a base electrode contact layer which contacts directly with said base electrode.

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27. Pertaining to claim 75, Yokoi teaches the device as claimed in claim 74, wherein said base electrode contact layer, said resistive element layer and said capacitive dielectric layer comprise the same compound semiconductor layer.

28. Pertaining to claim 76, Yokoi teaches the device as claimed in claim 75, wherein said base electrode and said bottom electrode comprise the same metal layer.

29. Pertaining to claim 78, Yokoi teaches the device as claimed in claim 75, wherein said base electrode and said resistive element electrodes comprise the same metal layer.

30. Pertaining to claim 79, Yokoi teaches the device as claimed in claim 73, wherein said at least electrode contact layer comprises a collector electrode contact layer which contacts directly with said collector electrode.

31. Pertaining to claim 80, Yokoi teaches the device as claimed in claim 79, wherein said collector electrode contact layer, said resistive element layer and said capacitive dielectric layer comprise the same compound semiconductor layer.

32. Pertaining to claim 81, Yokoi teaches the device as claimed in claim 80, wherein said collector electrode and said bottom electrode comprise the same metal layer.

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33. Pertaining to claim 83, Yokoi teaches the device as claimed in claim 80, wherein said collector electrode and said resistive element electrodes comprise the same metal layer.

34. Pertaining to claim 84, Yokoi teaches the device as claimed in claim 73, wherein said at least electrode contact layer comprises an emitter electrode contact layer which contacts directly with said emitter electrode.

35. Pertaining to claim 85, Yokoi teaches the device as claimed in claim 84, wherein said emitter electrode contact layer, said resistive element layer and said capacitive dielectric layer comprise the same compound semiconductor layer.

36. Pertaining to claim 86, Yokoi teaches the device as claimed in claim 85, wherein said emitter electrode and said bottom electrode comprise the same metal layer.

37. Pertaining to claim 88, Yokoi teaches the device as claimed in claim 85, wherein said emitter electrode and said resistive element electrodes comprise the same metal layer.

Allowable Subject Matter

38. Claim 53 allowed.

39. The following is an examiner's statement of reasons for allowance: prior art does not anticipate nor render obviousness as to a hetero-junction bipolar transistor having at least one passive device electrode with a plurality of first level interconnects and a plurality of second

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level interconnects wherein the electrode of the passive device comprises the same material of an electrode of the hetero-junction bipolar transistor.

40. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Objections

41. Claims 60, 65, 69, 77, 82, 87 and 89 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

42. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 703-305-0004.

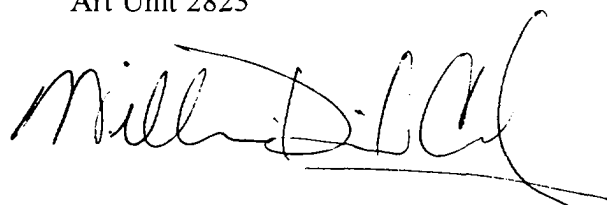
The examiner can normally be reached on 9:00 AM-5:00 PM.

43. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

44. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

W. David Coleman
Primary Examiner
Art Unit 2823

WDC

A handwritten signature in black ink, appearing to read "W. David Coleman", with a long horizontal flourish extending to the right.